

# CLEANUP ON AISLE 7: LEARNINGS FROM THE MESSY HFC TRANSITION FOR COMMERCIAL REFRIGERATION

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## Introduction

Retail refrigeration measures exist in a unique market, one that faces opportunities but also challenges to efficiency. This poster presents results from a market study intended to inform industry standard baselines, decision making, and upcoming disruptions facing this market.

One potential disruption is the American Innovation and Manufacturing Act (AIM Act) of 2020, which authorized the EPA to phase down hydrofluorocarbon (HFC) production and consumption, following global industry transitions. HFCs are greenhouse gases with high global warming potential (GWP) and are used in a number of measures that require refrigerants ranging from residential air conditioning and heat pumps to large scale commercial and industrial refrigeration equipment. Phasing down these refrigerants will require markets to pivot to other options, such as “natural” refrigerants like ammonia or CO<sub>2</sub>, which require removal and replacement of existing systems.

## Methodology

This study explored the decision-making and installation practices of large and small grocery-focused businesses in the Eastern United States. Qualitative in-depth interviews were conducted with six market actors, including installers, salespeople, and manufacturers who work with grocery and big box refrigerated casework. These interviews were qualitative in nature but still fairly structured in order to capture some of the technical concepts discussed by respondents and to assess overall market readiness.

## Key Findings and Results

Below is a table detailing some of the common practices identified in this research. It should be noted that one of the key findings was that industry standard practice was hard to quantify, as the number of decision-makers in this market is relatively small and installation practices are heavily dependent on their preferences – even for the identified common practices below. For example, while most market actors agreed doors were now common practice, one respondent noted they had a client who simply “*did not believe in doors*” and therefore the entire grocery chain did not have them on most cases.

Table 1. Industry Standard or Common Practice for Refrigerated Casework by Scenario

Scenario	Store/Measure Characteristic	Industry Standard or Common Practice
Used/Refurbished Equipment	Small, independent store	Sourcing refurbished or used equipment is standard practice
	Larger regional or national chains	Some may source refurbished equipment, but heavily dependent on decision-maker and scenario
Doors/Closed Cases	Low temp (all)	Doors/closed cases are common practice; exception may be some coffin cases which may still be open
	Medium temp (dairy)	Doors are becoming common, but dependent on decision-maker
	High to medium temp (meat, produce)	Open cases are common practice. Closed cases are rare

Scenario	Store/Measure Characteristic	Industry Standard or Common Practice
Case and “add-on” measure efficiency	Casework overall	Major renovations/replacements meet state code and DOE requirements for cases themselves (VFDs, floating suction pressure control), with minimal opportunity to exceed code
	LEDs in cases	Standard practice, needed for DOE compliance
	Other (anti-sweat heater controls, heat recovery, etc.)	Dependent on store size and decision-maker

This research uncovered a number of learnings beyond current installation practices. Market actors indicated that only rarely are entire refrigeration systems replaced unless there is a catastrophic failure, so many systems in place are very old. Because of this, several respondents felt that encouraging the removal of existing casework earlier than failure is the main opportunity for efficiency gains. Across the board, respondents felt that refrigerated casework is made to last significantly longer than the estimated useful life, and grocery stores will simply replace parts piecemeal as they fail with minimal wholesale replacement. Additionally, market actors who worked on designing and installing projects felt that while most grocery stores are aware of the AIM Act requirements, it was not a major consideration in installation practices yet. For market actors who worked with smaller chain or independent grocers, sourcing refurbished or used equipment is standard practice and this phase down could put these smaller stores out of business. These market actors also identified opportunities for program administrators to influence efficient choices during this challenging transition, including adiabatic cooling.

The grocery store segment is facing a major disruption in the next decade due to the AIM Act that will reshape the entire refrigerated casework market, including how stores think about the efficiency of these casework measures. This major disruption both provides opportunities for efficiency interventions as businesses need to replace entire systems, but also lessons learned on how program administrators can assess other markets in transition and influence efficient choices during the process.